

Translation

PATENT COOPERATION TREATY

PCT/JP2003/016677



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference JST-105-PCT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/016677	International filing date (day/month/year) 25 December 2003 (25.12.2003)	Priority date (day/month/year) 27 December 2002 (27.12.2002)
International Patent Classification (IPC) or national classification and IPC G01N 13/16, G12B 21/08		
Applicant JAPAN SCIENCE AND TECHNOLOGY AGENCY		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:

☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI Certain documents cited

☐ Box No. VII Certain defects in the international application

☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 16 July 2004 (16.07.2004)	Date of completion of this report 24 March 2005 (24.03.2005)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/016677

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:

- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

☐ The international application as originally filed/furnished

☒ the description:
 pages _____ 1-14 _____, as originally filed/furnished
 pages* _____ received by this Authority on _____
 pages* _____ received by this Authority on _____

☒ the claims:
 pages _____ 12-14 _____, as originally filed/furnished
 pages* _____, as amended (together with any statement) under Article 19
 pages* _____ 5-10 _____ received by this Authority on _____ 16 July 2004 (16.07.2004)
 pages* _____ received by this Authority on _____

☒ the drawings:
 pages _____ 1-6 _____, as originally filed/furnished
 pages* _____ received by this Authority on _____
 pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☒ the claims, Nos. _____ 1-4, 11 _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP 03/16677

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	5-10, 12-14	YES
	Claims		NO
Inventive step (IS)	Claims	6, 9, 10	YES
	Claims	5, 7, 8, 12-14	NO
Industrial applicability (IA)	Claims	5-10, 12-14	YES
	Claims		NO

2. Citations and explanations

Claims 5, 7 and 12-14

Document 1: Gerhard GROSCH, "Hybrid Fiber-optic/Micromechanical Frequency Encoding Displacement Sensor," Sensors and Actuators A, April 1990, Vol. 23, No. 1-3, pp. 1128 to 1131

Document 4: Hideki KAWAMASA, "100 Man-bon no Cantilever to 100MHz made no Sosagata Chikaraenbikyoku," 2002 Nen (Heisei 14 Nen) Shuki Dai 63 Kai Extended Abstracts, the Japan Society of Applied Physics, separate Vol. 0, 24 September 2002, 24p-N-3, page 6

Document 1 discloses the feature of measuring the oscillation frequencies of a multi-cantilever, wherein the natural oscillations of a plurality of cantilevers which have different natural oscillation frequencies are stimulated by means of an optical stimulus, and the oscillations are measured by means of a laser Doppler meter. In addition, document 1 also discloses a feature wherein a plurality of cantilevers are disposed "circularly," or, in other words, discloses a plurality of cantilevers which are implanted in an insular substrate in

a radial arrangement (in such a case, it is thought that the laser Doppler meter is capable of moving so as to accommodate the arrangement of the plurality of cantilevers).

Document 4 discloses the feature of measuring the oscillation frequencies of a multi-cantilever, wherein the natural oscillations of a plurality of cantilevers are simultaneously stimulated by means of a constant optical stimulus.

Claim 8

Document 1:

Document 2: JP 2002-168754 A (Japan Science and Technology Corp.), 14 June 2002, entire text, fig. 1-8

Document 4:

Document 2 discloses the feature of measuring the oscillation frequency of a cantilever, and discloses a homodyne interferometer.

Claims 6, 9 and 10

Document 1:

Document 2:

Document 3: WO 96/24819 A (International Business Machines Corp.), 15 August 1996, entire text, fig. 1-6C

Document 4:

Document 5: JP 10-170529 A (Casio Computer Co., Ltd.), 26 June 1998, claim 3, paragraph [0010] and fig. 2

Document 6: JP 6-201369 A (Matsushita Electric Ind. Co., Ltd.), 19 July 1994, entire text, fig. 1-32

Document 7: WO 00/75626 A (Commissariat a l'Energie

Atomique), 14 December 2000, entire text,
fig. 1-8

Documents 1 to 7 define the general state of the art in relation to technology for measuring the oscillation frequencies of multi-cantilevers; however, the documents in question do not disclose or suggest a plurality of cantilevers which are implanted so as to face towards the inside of a curled base part.